Avian and Pandemic Influenza

Information for Healthcare Management and Support

HQ USPACOM/J07

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Overview

- **Patient Education**
- **Modeling the Pandemic Threat**
- **Roles and Responsibilities During a Pandemic**
- **Characteristics of Avian Influenza (AI) Cases**
- **Prevention and Infection Control**
- **Resources**

Patient and Family Education

- **MTF staff must provide accurate answers to patient questions**
  - **Informed staff and consistent message reassures public**
- **Information for deploying personnel**
  - **No current travel restrictions**
  - **No routine screening recommended by the World Health Organization (WHO) for those returning from endemic areas**
- **Information for service members and families**
  - **Review USPACOM “Info for Soldiers and Families” briefing**
  - **Provides consistent patient education terminology/message**

Avian Influenza (AI)

Information for Healthcare Management and Support

Background Information

- **Pandemics have occurred throughout history**
  - **20th Century: 1918-1919, 1957, 1968**
  - **Historically, we are “due” for a pandemic**
- **Current “Bird Flu” (H5N1 strain of virus) in SE Asia**
  - **H5N1 strain has spread in birds from SE Asia to Europe, and is expected to continue spreading**
  - **Human cases primarily in SE Asia and Turkey; expected to occur more widely as bird infection spreads**
  - **40-50% of human cases have resulted in death**
  - **Spreads to humans via bird feces, secretions, blood, or infected meat**
    - **Route of exposure may be contact, ingestion, or inhalation**
  - **So far, no sustained human-to-human (H-to-H) transmission**
  - **Ability of virus to mutate increases potential for H-to-H spread**
  - **No pre-existing human immunity to H5N1**

Why worry?

- **Routine, seasonal flu kills ~36,000 in the U.S. annually**
- **Potential avian influenza (AI) pandemic much more serious**
- **Historical perspective: 1918 Spanish Flu pandemic**
  - **Over 675,000 American deaths**
  - **195,000 deaths in just one month (October 1918)**
  - **43,000 deaths among U.S. troops**
    - **Virus spread rapidly in troop transports and camps**
  - **Average American lifespan decreased by more than a decade**
  - **National death rates in ages 15-45 rose 20x over previous year**
    - **Mortality rate increased to 1- 2.5% (whereas the“normal” flu death rate in 1918 was 0.1%)**
    - **Rapid deaths—often same day as admitted to medical care**
- **Key indicator for pandemic: first cases of confirmed sustained human to human spread of avian flu**

Modeling the Threat

- **Some computer models available (i.e., FluSurge from CDC, etc.) to determine impact on medical facilities**
- **Following slides provide examples of facility and population data information from FluSurge software**
  - **Developed by CDC**
  - **Used by DoD to generate information for military treatment facilities (MTFs)**
- **Administrators and planners may be able to use these tools to better plan for PI response**

Pandemic Estimate for Mid-Sized City

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Step 1: Determine population of locale by age groups:

Age Group	Population
0-17 yrs	40,169
18-64 yrs	119,721
+ 65 yrs	29,921

Enter Data in WHITE boxes only!

VIEW ASSUMP-TIONS

Step 2: Determine basic hospital resources:

Total staffed beds:	180
Staffed ICU beds:	16
Total number of ventilators:	42

Step 3: Determine duration (6, 8, or 12 weeks) and attack rate (15%, 25% or 35%) of the pandemic:

Duration: 8 Attack rate: 25%

Step 4: Click to View Results

Notes: 1. Duration refers to the number of weeks you assume the pandemic wave to last.

2. Attack rate refers to the percentage of the population that becomes clinically ill due to influenza pandemic.

Assumptions:*

No. 1 Average length of hospital stay for influenza-related illness is 7 days.

No. 2 Average length of ICU stay for influenza-related illness is 10 days.

No. 3 Average length of ventilator usage for influenza-related illness is 10 days.

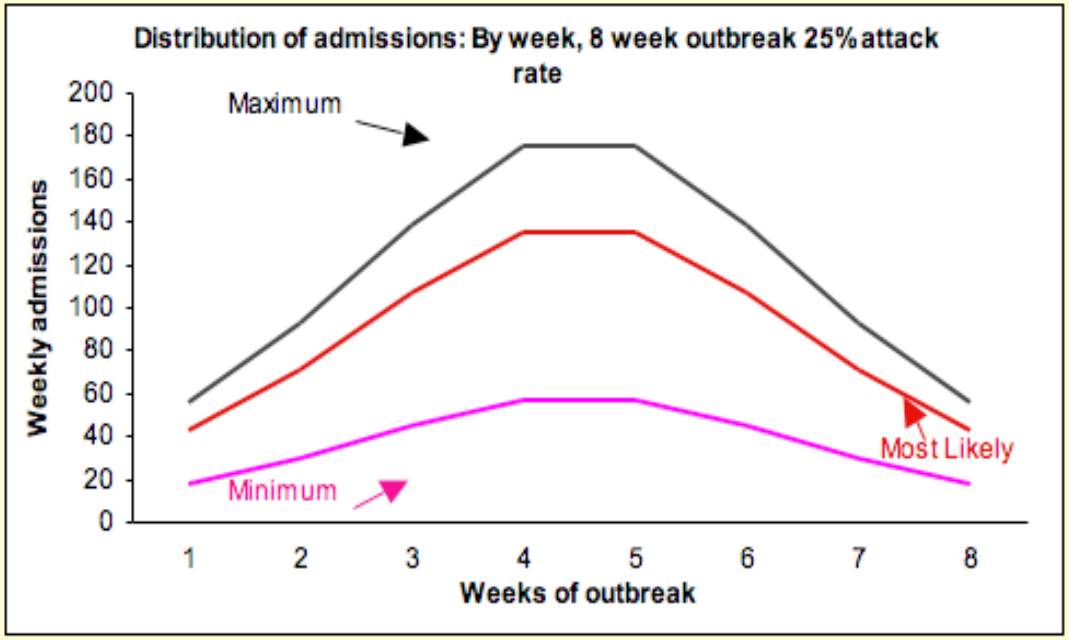
No. 4 An average of 15% of admitted influenza patients will need ICU care.

No. 5 An average of 7.5% of admitted influenza patients will need ventilators.

*IMPORTANT! Assumptions can not be changed in this version of FluSurge.

Pandemic Estimate

Influenza Pandemic Impact / Gross Attack Rate	25%
Total Hospital Admissions	
Most Likely Scenario	*707*
Minimum Scenario	295
Maximum Scenario	920
Total Deaths	
Most Likely Scenario	*145*
Minimum Scenario	89
Maximum Scenario	233



Hosp Adm. / Week	1	2	3	4	5	6	7	8
Most Likely Scenario	42	71	106	*134*	*134*	106	71	42
Minimum Scenario	18	30	44	56	56	44	30	18
Maximum Scenario	55	92	138	175	175	138	92	55

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Pandemic Estimate

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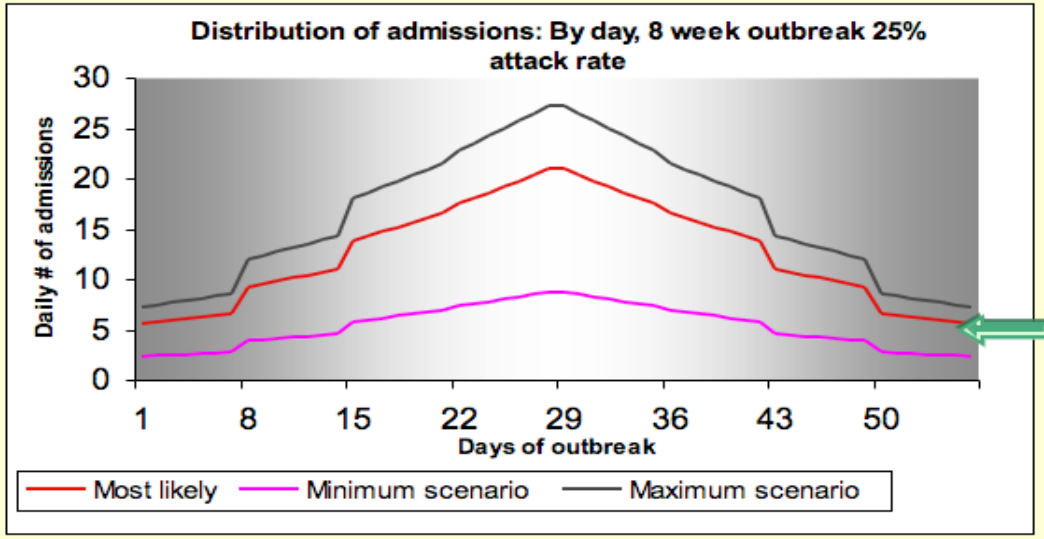

Total Hospital Admission (most likely)	707
Total Death (most likely)	145

Influenza Pandemic Impact	/ Weeks	1	2	3	4	5	6	7	8	9	10
Hospital Admission	Weekly admission	42	71	106	134	134	106	71	42		
	Peak admission/day				21	21					
Hospital Capacity	# of flu patients in hospital	42	71	106	134	141	130	101	66		
	% of hospital capacity used	24%	39%	59%	75%	78%	72%	56%	37%		
ICU Capacity	# of flu patients in ICU	6	13	21	27	30	29	23	16		
	% of ICU capacity used	40%	84%	130%	171%	185%	180%	143%	99%		
Ventilator Capacity	# of flu patients on ventilators	3	7	10	14	15	14	11	8		
	% usage of ventilator	8%	16%	25%	33%	35%	34%	27%	19%		
Deaths	# of deaths from flu			9	15	22	28	28	22	15	9
	# of flu deaths in hospital			6	10	15	19	19	15	10	6

Notes: 1. All results showed in this table are based on most likely scenario.
2. Number of flu patients in hospital, in ICU, and number of flu patients on ventilator are based on maximum daily number in a relevant week.
3. Hospital capacity used, ICU capacity used, and % usage of ventilator are calculated as a percentage of total capacity (see manual for details).
4. The maximum number of flu patients in the hospital in a week is greater than weekly admission after the peak because we assume a 7-day stay in general wards (see manual for details).

Pandemic Estimate

Table 1. Number of Episodes of Illness, Healthcare Utilization, and Death Associated with Moderate and Severe Pandemic Influenza Scenarios*

Characteristic	Moderate (1958/68-like)	Severe (1918-like)
Illness	90 million (30%)	90 million (30%)
Outpatient medical care	45 million (50%)	45 million (50%)
Hospitalization	865,000	9,900,000
ICU care	128,750	1,485,000
Mechanical ventilation	64,875	742,500
Deaths	209,000	1,903,000

*Estimates based on extrapolation from past pandemics in the United States.Note that these estimates do not include the potential impact of interventions not available during the 20th century pandemics.

According to some modeling analysis and advice of most public health experts, there will not be enough ventilators, trained staff, or other resources to manage every case during a severe pandemic

So...what will clinicians do?

Roles During a Pandemic

- **Monitor global and community PI-related events**
- **Familiarize yourself with unit plans**
  - **Discuss, refine and update plans with colleagues**
  - **Understand concept of operations to treat multiple patient classes (inpatient, symptomatic outpatient, worried well, etc.)**
  - **Know MTF/Alternate Facility capabilities and limitations**
    - **Isolation, bed space, equipment, security, etc.**
  - **Know MTF laboratory testing capability and turn-around time**
  - **Understand disease reporting requirements**
  - **Determine availability of local/host-nation support**
- **Report cases to public health officials**
  - **Important to ensure resources are shared as equitably and efficiently as possible**
  - **Patients receive the best care**

Roles During a Pandemic

- **Increase cross-communication at all levels,- ensure consistency in information and message**
  - **Reassures the public**
- **Leverage joint/inter-agency/local/host-nation resources through collaboration**
- **Non-clinical/ planning roles**
  - **Mortuary support**
  - **Psychological support**
  - **Logistics support**
  - **Patient tracking assistance**
- **Primary care managers**
  - **Routine assessment/treatment**
  - **Know clinical and epidemiological features of PI to prepare MTFs for a pandemic**

Release of Patient Information

- **Check unit policies for release of information**
  - **Inquiries/concern from family members/deployers**
  - **Other requests for information**
- **Those releasing information need to know HIPAA restrictions and exemptions**
- **Exempt from HIPAA:**
  - **Public health information**
  - **Information for Commanders**

Public Health Emergency Officer (PHEO)

- **Has a critical role in any public health emergency**
- **DoDD 6200.3 *Emergency Health Powers on Military Installations* directs appointment of a PHEO to:**
  - **Coordinate medical response during a public health emergency**
  - **Advise commander on restriction of movement**
  - **Assist with preparations and planning**
- **PHEO Responsibilities**
  - **Confirms public health emergency**
  - **Advises commander in event of a pandemic**
  - **Must be supported by Commander and multiple command components (e.g. JAG, Logistics, PAO, security) to be effective**
  - **Conducts epidemiological investigation**
  - **Shares information with Federal, State, and local public health or safety officials**

Disease Surveillance

- **Disease surveillance is primary indicator of threat**
  - **Know routine disease occurrence (pre-pandemic) baseline**
  - **Speed in detecting out-of-norm occurrences is key**
- **Monitor occurrence of influenza-like illness (ILI)**
  - **Increase vigilance and testing of suspected cases**
  - **Maintain a high index of suspicion**
- **Use automated tools (e.g., ESSENCE)**
  - **Identifies regional and MTF-specific trends**
  - **Timely and accurate coding at MTF is critical**
  - **High sensitivity but low specificity**
    - **False alarms highly probable—requires research of cause**
- **Astute clinicians remain, as always, our best surveillance tools**

Typical Flu Symptoms

- **Incubation Period – 1 to 4 days (average = 2 days)**
- **Period of Illness – 3 to 7 days**
- **Infectious Period (virus able to spread human-human)**
  - **1 to 2 days prior to developing symptoms**
  - **3 to 5 days after developing symptoms (adults)**
  - **Up to 7 days after developing symptoms (children)**
  - **Infectious period may be longer if immune system is weak**
- **Typical seasonal flu signs and symptoms:**
  - **Fever (>100.4)**
  - **Headache**
  - **Cough**
  - **Difficulty breathing**
  - **Muscle aches**

AI Cases

- **Additional Avian Influenza signs and symptoms:**
  - **Eye infections**
  - **Pneumonia**
  - **Diarrhea and Gastrointestinal problems**
  - **Persistent fever, lymphopenia**
  - **Severe pneumonia or ARDS**
  - **Unusual presentations possible**
- **Incubation period may be longer than for seasonal flu**
- **Exposure to infected fowl present in nearly all cases**
- **Clustering may signal an emergency**

Strategy for PI Prevention

- **Contain or delay spread of a pandemic influenza strain**
- **May buy time for adequate production and distribution of an effective vaccine**
  - **No large amount of vaccine expected for the first 6 to 9 months of a pandemic**
  - **After passage of the first pandemic “wave” through a region (over ~6-8 weeks), there still may be other waves in subsequent months**
- **Allows healthcare systems to better manage patients and contacts in existing facilities**

Taking Care of Yourself and Patients

- **Wash hands frequently using soap and water or waterless hand cleaners**
- **Practice social distancing**
  - **Increase personal space to limit exposure**
- **Use N-95 masks and other Personal Protective Equipment**
  - **Use surgical masks on patients**
- **Avoid tobacco smoke**
- **Keep the flu out of the workplace!**
  - **Don’t go to work if you’re possibly sick with the flu**
- **Get your annual flu shot**

PI Infection Control

- **Specific measures for healthcare settings**
  - **Room cleaning: Normal cleaning products and procedures**
  - **Linen changes: Normal handling is sufficient**
  - **Infectious waste disposal: No additional special handling required**
- **Communication/Enforcement of unit policies**
  - **Refer questions to Infection Control personnel**

Antivirals

- **Oseltamivir (Tamiflu) and Zanamivir (Relenza) are effective, but in limited supply**
  - **USPACOM contingency reserves of Oseltamivir are available**
- **Amantadine and rimantadine are ineffective against H5N1**
- **Poorly controlled use of antivirals could stimulate development of drug resistance**

Experimental Vaccines Against H5N1

- **Phase I (Safety and Immunogenicity) testing began in April, 2005 in the US**
  - **Evaluation at three NIH-supported study sites**
  - **Based on H5N1 virus from a Vietnamese boy (2004)**
  - **But, no cross-reactivity with 2005 Indonesian strain**
  - **Study size of 450 healthy adults (Age 18-64)**
- **If vaccine study is successful, plan to test in other populations (e.g. elderly and children)**

DoD Priorities for H5N1 Vaccine

- **Vaccine expected to be available to DOD personnel after FDA approval, but in limited supply**
- **Prioritization expected to match those for limited stocks of Oseltamivir**
  - **<u>Tier 1:</u> Personnel necessary to respond to global military contingencies and provide essential force health care Includes deployed forces, essential billets to maintain functioning health care system, and those required for national strategic and critical operations defined by the JS**
  - **<u>Tier 2:</u> Non-deployed forces on alert or designated to conduct critical contingency operations**
  - **<u>Tier 3:</u> Personnel necessary to maintain mission-essential capabilities at each organizational level**
  - **<u>Tier 4:</u> All other Active Components or mobilized Reserves**
  - **<u>Tier 5:</u> All other beneficiaries not previously included according to CDC priority tiers**

Management of AI Cases

- **Some similarity with management of Severe Acute Respiratory Syndrome (SARS), but some important differences**
- **Patients with fever and respiratory symptoms:**
  - **Should be managed according to recommendations for Respiratory Hygiene and Cough Etiquette and**
  - **Questioned regarding recent travel history**
- **Manage patients using isolation precautions if:**
  - **Patient traveled to country with AI activity within 10 days and**
  - **Patient is hospitalized with severe febrile respiratory illness, or are otherwise under evaluation for AI**

Isolation Precautions

- **Identical to SARS isolation precautions**
- **Standard Precautions**
  - **Pay careful attention to hand hygiene before and after all patient contact or contact with items potentially contaminated with respiratory secretions**
- **Contact Precautions**
  - **Use gloves and gown for all patient contact**
  - **Use dedicated equipment such as stethoscopes, disposable blood pressure cuffs, disposable thermometers, etc.**
- **Eye protection (i.e., goggles, face shields, etc.)**
  - **Wear when within 3 feet of a patient**

Airborne Precautions

- **Place patient in an airborne isolation room (AIR) with following characteristics:**
  - **Monitored negative air pressure in relation to corridor**
  - **6 to 12 air changes per hour (ACH)**
  - **Exhausts air directly outside or re-circulates air filtered by a high efficiency particulate air (HEPA) filter**
- **If an AIR is unavailable, consider use of portable HEPA filters to augment the number of ACH**
- **Use a fit-tested respirator when entering room**
  - **Minimum standard is National Institute of Occupational Safety and Health (NIOSH)-approved N-95 filtering face piece (disposable) respirator**

Resources

- **U.S. pandemic influenza information and plan**
  - www.pandemicflu.gov
- **U.S. public health guidelines**
  - www.cdc.gov
- **Global updates and official case reports**
  - www.who.int
- **US Pacific Command avian influenza website**
  - www.pacom.mil/special/avianflu05/index.shtml

Summary

- **Strategy: Slow or contain spread of pandemic flu strain to buy time to develop a safe, effective vaccine**
- **Basic hand washing and cough etiquette will help**
- **Masks are low-cost/low-risk, and may offer some protection**
- **Vaccine is best prevention tool, but may not be available for first 6-9 months of a pandemic**
- **Oseltamivir (Tamiflu) is one proposed treatment/prophylaxis, but is in short supply**
- **Isolation and social distancing may prove effective**
- **Quarantine is not yet of proven benefit**

Questions?